In the Claims

1. (Original) An apparatus for intended use in charging particles in a system for separating particles from a fluid flow, comprising:

a chamber including an inlet for receiving the particles and an outlet for discharging the particles; and

a rotor rotatably mounted in the chamber, the rotor having a generally non-permeable outer surface for contacting and assisting in charging the particles.

2. (Original) The apparatus according to claim 1, wherein the rotor is circular, polygonal, or gear-shaped in cross-section.

3. (Original) The apparatus according to claim 1, wherein the chamber is generally cylindrical.

4. (Original) The apparatus according to claim 1, wherein the outlet is positioned below and generally opposite the inlet.

5. (Original) The apparatus according to claim 1, further including a partition projecting into the chamber adjacent the rotor.

6. (Original) The apparatus according to claim 5, wherein the partition is adjustable to vary the distance between an end of the partition and the rotor.

7. (Original) The apparatus according to claim 1, further including a motor for rotating the rotor.

8. (Original) The apparatus according to claim 1, wherein the rotor rotates at a rotational speed of between about 1,200 and 10,000 revolutions per minute.

9. (Currently Amended) The apparatus according to ~~claims 1-8~~ claim 1, further including an electric field in the chamber.

10. (Original) The apparatus according to claims 9, wherein the electric field is created by a variable voltage source having a first lead connected to the rotor and a second lead connected to a wall of the chamber.

11. (Original) A particle separation system including the apparatus of claim 1.

12. (Original) An apparatus for intended use in separating particles of a mixture, comprising:

a body including an inlet for receiving the electrically charged particles to be separated, a separation chamber, a first electrode for attracting particles having a first selected charge, and a second electrode for attracting particles having a second selected charge;

wherein the first and second electrodes are grid electrodes having a plurality

of elongated fingers extending along the separation chamber spaced apart from the body; and

a flow straightener positioned in or adjacent to the inlet for receiving and straightening a co-flow of fluid passing over and between the fingers of the grid electrodes.

13. (Original) The apparatus according to claim 12, further including a variable voltage source for applying a positive voltage potential to the first electrode and a negative voltage potential to the second electrode.

14. (Original) The apparatus according to claim 12, wherein the fingers on each electrode are connected to a common header.

15. (Cancelled)

16. (Original) A method of charging particles using the apparatus of claim 1.

17. (Original) A method of separating particles using the apparatus of claim 12.

18. (Original) A method of separating particles from a particle mixture, comprising:

actuating a rotor to create a differential charge on the two or more constituent species of particles in the mixture; and

separating the differentially charged particles into the two or more constituent species at a location downstream of the chamber.

19. (Original) The method of separating particles according to claim 18, wherein the actuating step comprises rotating the rotor.

20. (Original) A method for separating electrostatically charged particles from a mixture, comprising:

introducing the charged particles to a separation chamber including a positive grid electrode for attracting negatively charged particles and a negative grid electrode for attracting positively charged particles; and

sweeping away corresponding particles from the grid electrodes using a straightened co-flow of fluid.

21. (Original) The method according to claim 20, further including the step of actuating a rotor in a mixing chamber upstream of the separation chamber to enhance the charge on the particles in the mixture.